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|--|----------------------------------|-----|-----|-------|
| Controlling Universal-Motor Speed | Adem | 1/5 | 118 | (6.0) |
| 1. Title. | | | | |
| 2. Author's last name (see Author Index for complete name). Departments in regular issues are denoted by the following code: | | | | |
| N/T | News/Trends | | | |
| Scan | Scanning the Field for Ideas | | | |
| DIA | Design in Action | | | |
| DI | Design International | | | |
| CD | Conference Digest | | | |
| AD | Abstracts for Design | | | |
| 3. Date of issue, MACHINE DESIGN <i>Reference Issues</i> are denoted by the following code: | | | | |
| S | Seals (March 9) | | | |
| F&J | Fastening & Joining (June 15) | | | |
| MD | Mechanical Drives (September 21) | | | |
| M | Metals (December 14) | | | |
| 4. Page Number. | | | | |
| 5. Number of pages in article or editorial item. | | | | |

Electrical and Electronic Drives, Controls and Systems

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Electrical Systems	Campbell	9/14	192	(8.0)
Three Small-Motor Developments	N/T	2/2	24	(0.7)
Mercury Unit Tests Its Stamina	N/T	6/8	16	(0.7)
Concentric Stators Provide Gearless Dual Speed	Scan	5/25	165	(1.0)
Modular Motor Cuts Air-Tool Down Time	DIA	11/23	50	(1.0)

12. Power Supplies

Realistic Materials Form MHD Generator That Produces 60-Hz Three-Phase Power	N/T	4/13	43	(0.7)
'Instant Recharge' Cuts Battery Downtime	N/T	5/25	12	(0.5)
Migrating Ions Indicate Gas Concentration	Scan	2/2	130	(1.0)
Dual Signal Nullifies Sensor Thermal Drift	Scan	7/20	182	(1.0)
Chopper Sifts Weak Radiation From Noise	Scan	10/26	178	(1.0)
Two-Way Scanner Checks for Blemished Bottles	DIA	1/5	32	(1.0)
Steel-Strip Booms Extend Solar Cell 'Window Shade'	DIA	3/2	30	(2.0)
Batteries Are Important Gear for Modern Nimrod	DIA	3/16	53	(1.0)
Swedish Sub May Run On Fuel-Cell Power	DI	3/2	34	(1.0)
Kids Watch Fuel Cell in Action	DI	6/8	52	(0.5)
Fuel Cells for Small Subs	CD	5/25	198	(2.0)

13. Switches and Relays

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Expanding-Tube Probe Senses Temperature Change	Scan	8/31	106	(0.5)
Magnetic Circuit Forms Contactless Switch	Scan	12/21	117	(0.5)
Mass-Produced Relays Promise Consistent Characteristics	DIA	12/7	48	(1.0)
Relay Reliability	CD	7/6	138	(3.0)

14. Instruments and Controls

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Fancake Picture Accelerates Solenoid Sculptured Voltage	N/T	9/14	14	(1.3)
Pull-In	Scan	1/19	210	(0.6)
Magnetic Leak Triggers Tension Sensor	Scan	2/16	230	(0.5)
Bearing Differential Senses Shaft-Speed Variance	Scan	4/27	218	(1.0)
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Second Solenoid Winding Smothers Transients	Scan	5/11	167	(0.5)
Dual Expansions Boost Actuator Sensitivity	Scan	5/11	185	(0.5)
Thermal Flow Patterns Reveal Hidden Defects	Scan	5/25	169	(1.0)
Electronic Tick-Tock Regulates Clock	Scan	7/6	121	(1.0)
Heat-Sensitive Circuit Informs CO Level	Scan	8/3	109	(1.0)
Thread Alignment Indicates Position Without Contact	Scan	10/26	180	(1.0)
Shuttling Magnet Controls Bell Striker	Scan	11/9	183	(0.5)
Shifting Encoder Discs Measure Torque	Scan	12/7	163	(1.0)
Winking Probe Indicates Fill Level	Scan	12/7	166	(0.5)
Shaft Voltage Indicates Shaft Twist	Scan	12/7	166	(0.5)
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Precision Potentiometers	Glotfelter	5/11	175	(5.0)
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Lesson 5—The Junction Transistor	(Article)	1/19	202	(8.0)
Lesson 6—Characteristics and Ratings of Transistors	(Article)	2/2	122	(8.0)
Lesson 7—Basic Transistor Amplifier Circuits	(Article)	2/16	220	(6.0)
Lesson 8—Manufacture and Testing of Transistors	(Article)	3/2	94	(8.0)
Lesson 9—Compound Semiconductor Materials	(Article)	3/16	186	(6.0)
Lesson 10—Related Semiconductor Devices	(Article)	3/30	126	(9.0)

Lesson 11—Introduction to Integrated Circuits	(Article)	4/13	185	(8.0)
Lesson 12—Trends in Integrated Circuits	(Article)	4/27	223	(7.0)
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First Germanium Integrated Circuits Switch Faster Than Fastest Silicon	N/T	3/16	10	(0.6)
Overloaded Resistor Refuses To Burn	N/T	3/16	41	(0.7)
Future For Electronics: From °C to LSI and IEC	N/T	3/16	44	(1.2)
Laser Is Studied As General-Purpose Eye Fixer	N/T	4/13	16	(0.7)
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Laser Welding Succeeds As Production Tool	N/T	6/8	10	(0.6)
Sphere Beats Cylinder At Pumping A Laser	N/T	12/21	28	(0.5)
Astronaut Styles Feature Ready-to-Wear Instruments	DIA	1/19	30	(1.0)
Sensor Stabs Foul-Smelling Milk Bottles	DIA	1/19	34	(1.0)
Pneumatic Finger Checks For Machining Flaws	DIA	4/13	64	(0.5)
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'Music Box' Feeders Convert Motion to Readout	DIA	4/27	64	(1.0)
High-g Shocks Don't Bother Precision Recorder	DIA	4/27	66	(1.0)
Air-Sampling Sensor Cuts Cost Of Frost-Free Freezer	DIA	8/17	59	(1.0)
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16. Connectors and Wiring

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Electromagnetic Shielding	Bunk & Donovan	7/6	102	(16.0)
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Electrostatic Squeeze Transmits Torque	Scan	2/2	108	(1.0)
Prismatic Viewer Finds Curve Tangent	Scan	3/30	121	(1.0)
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Magnetic Skids May Slow Super-Trains	DIA	10/26	52	(0.5)
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19. Systems, Drives, Assemblies

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Low-Cost Servosystems	Prill	10/26	186	(9.0)
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The Littlest Computer	N/T	10/26	26	(1.7)
Pulsed Laser Searches Computer's Memory	N/T	12/7	37	(0.6)
SCR Network Provides Total Motor Control	Scan	1/5	132	(0.5)
Leaf-Spring Sensor Regulates Stopper Flipper	Scan	1/5	136	(0.5)
Merry-Go-Round Mechanism Controls Fill Capacitance Monitors Cutting Tool Position	Scan	1/19	201	(1.0)
Oscillating Stators Create Slow Rotation	Scan	3/2	102	(1.0)
Batteries Are Important Gear for Modern Nimrod	DIA	3/16	54	(1.0)
Electromagnetic Packaging	CD	4/13	196	(2.8)
Putting N/C To Work	CD	6/8	182	(1.6)

Fluid Drives, Controls and Systems

22. Fluid Conditioners

Miniature Hydraulic Power Units	MacDonald	4/13	175	(4.0)
Pressure-Vessel Closures	Frederick	5/11	183	(4.0)
Fluid System Filtration:				
Part 1—How Much and Where?	Farris	5/25	163	(5.0)
Part 2—Meeting System Requirements	Farris	6/8	187	(4.0)
Simple Cooler Will Air Condition New Jet Transport	N/T	6/8	37	(0.6)
High-Speed Centrifuge Promises Multidose Vaccines	N/T	9/28	50	(1.0)
Helical Maze Stirs Fluids	Scan	7/20	183	(0.5)
Contamination in Hydraulic Systems	CD	10/26	200	(1.6)

23. Fluid Conductors

New Concept Creates Sexless Fluid Coupling	N/T	7/6	40	(1.0)
Dial-A-Squirt Sprinkler Waters Odd-Shaped Lawns	N/T	8/17	62	(2.0)
Wedge Eccentrics Form Threadless Fastener	Scan	7/20	183	(0.5)
Concentric Cyclones Strip Dust From Air Airtight Coupling Allows Fill-And-Go Copter Refueling	Scan	8/31	105	(1.0)
Electric Field "Boils" Water From Photographic Film	DIA	6/8	62	(1.0)
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24. Linear Devices

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Cylinder-Port Valves Position Piston	Scan	6/8	161	(0.5)
Jointed Piston Forms Variable-Volume Pump	Scan	7/6	118	(1.0)
Telescoping Pistons Form Multifunction Actuator	Scan	8/3	108	(0.5)
Temperature-Sensitive Cylinder Maintains Wire Tension	Scan	8/17	155	(0.5)
Squeezed-Oil Release Pulses Piston	Scan	12/7	164	(1.0)

25. Rotary Devices

New Approach Keeps Pump Cool and Quiet Shutling Cavities Pump Fluid	N/T	1/5	20	(0.7)
Bimetal Sensor Varies Blower-Blade Bite	Scan	2/16	201	(1.0)
Orbiting Vector Drives Output Gear	Scan	2/16	216	(1.0)
Catapulting Vanes Accelerate Shaft Start-Up	Scan	3/19	193	(1.0)
Orbiting Piston Pumps Fluid	Scan	4/13	167	(1.0)
Centrifugal Oil Feed Grades Coupling Output	Scan	5/11	168	(1.0)
Inflatable Pouches Form Rotary Actuator	Scan	5/25	170	(0.6)
Spinning Cone Forms Moisture Homogenizer	Scan	7/6	119	(1.0)
Torque Differential Drives Motor	Scan	10/12	181	(0.5)
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26. Seals, Packings, Gaskets

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Radial Positive-Contact Seals	Baeder	S 3/9	6	(5.0)
Exclusion Devices	Isebarger	S 3/9	11	(4.0)
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Circumferential Seals	Taschenberg	S 3/9	24	(3.0)
Axial Mechanical Seals:				
General Types	Tankus	S 3/9	27	(9.5)
Metal-Bellows Type	Stevens	S 3/9	36	(2.3)
Compression Packings	Mathews & McKillop	S 3/9	39	(6.0)

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Squeeze-Type	Everett & Gillette	S 3/9	52	(7.0)
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27. Valves

Controlling Hydraulic Valves:

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Comparing the Systems—Proportional Electric	Hurd	7/20	157	(2.3)
Comparing the Systems—Hydraulic	Dyal	7/20	159	(2.9)
Comparing the Systems—Pneumatic	Cain	7/20	162	(2.5)
Comparing the Systems—Fluidic	Long	7/20	165	(2.0)
Rotating Ball Forms Air-to-Vacuum Lock	Scan	2/16	226	(1.0)
Sensor Gears Activate Flow-Ratio Servo	Scan	2/16	230	(0.5)
Piston Provides Programmed Push	Scan	3/30	122	(0.5)
Floating Magnet Signals Fluid Flow	Scan	4/13	166	(0.6)
Floating Piston Forms Metering Dispenser	Scan	7/20	154	(1.0)
Reversible Piston Blocks Pressure Transients	Scan	8/17	154	(0.5)
Nozzle Array Generates Invisible Shield	Scan	8/17	155	(0.5)
Grooved Cylinders Produce Variable Aperture	Scan	8/17	157	(0.5)
Wrap-Up Flap Controls Flow	Scan	10/26	179	(0.5)
Thermal Overtravel Spring Also Relieves Backpressure	Scan	11/9	184	(0.5)

28. Instruments and Controls

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Fluid Systems—The Modern Revival	Tucker	1/5	137	(12.0)
Fluidic System Design:				
Part 15—Circuit Synthesis	Latham	1/5	124	(7.0)
Part 16—Component Fabrication	Latham	1/19	215	(3.0)
Part 17—Test Equipment	Latham	2/2	142	(7.0)
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Controlling Hydraulic Valves:				
Rating the Key Factors	Long	7/20	152	(2.0)
Comparing the Systems—Solenoid	Froemming & Larsen	7/20	154	(3.3)
Comparing the Systems—Proportional Electric	Hurd	7/20	157	(2.3)
Comparing the Systems—Hydraulic	Dyal	7/20	159	(2.9)
Comparing the Systems—Pneumatic	Cain	7/20	162	(2.5)
Comparing the Systems—Fluidic	Long	7/20	165	(2.0)
Proportional Fluidic Control	Wood	8/3	129	(4.0)
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Oscillating Vortex Indicates Flow Rates	Scan	1/5	117	(1.0)
Torque-Arm Variation Indicates Gas Density	Scan	8/17	153	(1.0)
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29. Systems and Assemblies

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New Lubricant Test Draws Map of What's Wrong	N/T	11/23	37	(0.7)
Mammooth Aerosols Spurt Multitude of Products	DIA	3/16	52	(1.0)

Mechanical Drives, Controls and Systems

31. Engines, Atomic Power, Power Sources

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Part 2	Esty	7/20 169	(5.0)
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Solid-Solid Rocket Starts/Stops/Reignites	N/T	2/16 21	(0.7)
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Engine Holds Body On New Lotus-Ford	N/T	6/22 14	(2.0)
Ford Previews Pollution Controls For '68	N/T	8/3 12	(1.0)
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Combustion Engine Called Best For Dives To The Ocean Bottom	N/T	10/12 58	(0.5)
Complete Controllability Claimed for Rocket	N/T	10/26 32	(0.6)
TF-41 Jet-Engine Program Is Ahead Of Schedule	N/T	11/9 32	(0.6)
Rankine Cycle Bids For Electrical Work	N/T	12/7 12	(0.5)
Gasoline Engines Will Meet Pollution Standards	N/T	12/7 60	(0.6)
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Shaft-Mounted Reducers	Chung	MD 9/21 40	(1.5)
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Variable Ratios from Planetaries	Kaplan	8/17 183	(2.0)
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Flat Belts	Zaiss	MD 9/21 14	(4.0)
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Gear Failures	Crawshaw & Kron	MD 9/21 18	(6.0)
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Errant Conveyor Powers Self-Correcting Mechanism	Scan	4/27 221	(1.0)
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Orbiting Knuckles Form Constant-Velocity Joint	Scan	1/19 181	(1.0)
Drive Torque Controls Brake	Scan	3/2 93	(0.6)
Coil Spring Forms Resilient Shaft Bearing	Scan	3/16 194	(1.0)
Viscous Churn Brakes Roller	Scan	3/16 206	(0.5)
Annular Spring Forms Resilient Coupling	Scan	4/13 165	(1.0)
Wear-Sensing Ratchet Offsets Brake Decay	Scan	4/27 220	(1.0)
Brake-Clutch Arrangement Forms Torque Switch	Scan	6/8 162	(1.0)
Clutch Servo Maintains Constant Torque Output	Scan	8/17 156	(1.0)
Piggyback Bearing Cuts Ball Speed	Scan	8/31 106	(0.5)
Inertial Clamp Actuates Clutch	Scan	9/28 169	(0.6)
Inclined-Cable Trolley Brakes Itself ...	Scan	10/12 181	(0.5)
Shifting Mass Governs Clutch Output Speed	Scan	12/21 114	(1.0)
Lawn Mower Clutch Made from Die-Cast Components	DIA	1/5 40	(0.5)
Clutch Control Assists Invalid Drivers	DIA	1/5 42	(0.5)
Air-Bearing Rotor Boosts Accelerometer Sensitivity	DIA	2/2 38	(0.5)
Dash Light Warns of Unsafe Brakes ..	DIA	2/2 38	(0.5)
Log-Dragging Rig Relies on Interlocked Winches	DIA	11/9 56	(1.0)
Snowless Skiing Scheme	DI	6/22 37	(0.7)

36, 37. Mechanisms, Controls

Motion Amplifiers	Tuttle	2/2 131	(5.0)
Precise Adjustment	Tuttle	2/16 227	(3.0)
Power Springs	Wells	8/31 113	(3.0)
Customized Motions	Tao	10/12 215	(4.0)
Cam Sizing Simplified	Savage	10/26 181	(5.0)
Latch and Trip Mechanisms	Tuttle	12/7 179	(4.0)
Rolamite—What Makes It Tick?	Brickman	12/21 110	(4.0)
Rolamite	N/T	11/9 44	(4.0)
Space Mechanism Indicates Axial Load	Scan	1/5 136	(0.5)
Dovetailed Cam Shunts Reaction Force	Scan	2/2 136	(1.0)
Shutting Plate Modulates Dual-Output Rotation	Scan	6/8 160	(1.0)
Bidirectional Input Drives One-Way Ratchet	Scan	8/3 108	(0.5)
On-Off Pivots Control Motion-Converter	Scan	8/17 154	(0.5)
Bogie Wheels Clamp Step-Drive Nulls	Scan	10/12 180	(1.0)
Dual-Motion Clamp Lifts and Tilts	Scan	11/9 184	(0.5)
Magnetic Latches Control Escapement ..	Scan	12/7 165	(0.5)
Clock Escapement Ticks Off Spaces ...	DIA	3/30 44	(1.0)
Soft Touch Reduces Secretary Fatigue	DIA	10/26 50	(2.0)
Time Flips By On Split-Card Clock	DIA	12/21 40	(1.0)
Mechanical Governors	Bickford	4/13 168	(7.0)
Rotor Turns A Spacecraft	N/T	10/12 12	(0.5)
Satellite Won't Wobble When Designed To Spin 'Wrong'	N/T	11/23 14	(0.6)

Assembly Components

41-43. Fasteners, Springs, Misc.

Coupling Shafts with Retaining Rings..	Parmley	1/19	211	(4.0)
Self-Threading Nuts	Baer & Duffy	4/27	209	(4.0)
Terminology	Belford	F&J 6/15	4	(4.0)
Set Screws	Kull	F&J 6/15	36	(4.0)
Single-Thread Engaging Nuts	Seltz & Petrus	F&J 6/15	52	(3.0)
Captive or Self-Retaining Nuts:				
Anchor Nuts	Mikaly	F&J 6/15	55	(2.4)
Caged Nuts	Seltz & Petrus	F&J 6/15	57	(1.6)
Clinch Nuts	Massey	F&J 6/15	58	(2.0)
Self-Piercing Nuts	Steward	F&J 6/15	60	(2.0)
Inserts	Viscio	F&J 6/15	63	(4.0)
Washers	Hurst & Wagner	F&J 6/15	67	(3.0)
Pin Fasteners	Braendel	F&J 6/15	74	(5.0)
Blind Rivets	Freeman	F&J 6/15	83	(3.0)
Spring Clips	Seltz & Petrus	F&J 6/15	86	(6.0)
Retaining Rings:				
Stamped Retaining Rings	Wurzel	F&J 6/15	92	(3.5)
Wire-Formed Retaining Rings	Miller	F&J 6/15	95	(2.8)
Spiral-Wound Retaining Rings	McCormick	F&J 6/15	98	(4.6)
Quick-Operating Fasteners	Barry	F&J 6/15	103	(3.0)
Inserts in Molded Rubber	Tuxworth	10/12	185	(3.0)
Tapping Screws	(Chapter)	F&J 6/15	31	(5.0)
Locking Fasteners	(Chapter)	F&J 6/15	38	(4.0)
Studs	(Chapter)	F&J 6/15	40	(2.0)
Locking Fasteners	(Chapter)	F&J 6/15	48	(4.0)
Sealing Fasteners	(Chapter)	F&J 6/15	70	(4.0)
Small Rivets	(Chapter)	F&J 6/15	79	(4.0)
Coming: No Loose Nuts In Fords	N/T	3/30	16	(1.0)

T-Cup Holds Solids Only	N/T	11/9	36	(0.6)
Nut Cold-Forms Lock Washer	Scan	3/2	103	(1.0)
Honeycomb Cluster Jams and Joins	Scan	4/27	222	(0.5)
Expanding Spring Tightens Anchor Bolt	Scan	5/11	167	(0.5)
Thread Slot Vents Pressure	Scan	6/8	161	(0.5)
Captive Disc Fastens Fabric	Scan	8/3	110	(0.5)
Rolling Latch Ignores Gate Preload ...	Scan	8/31	104	(1.0)
Resilient Bushing Detunes Bolt Resonance	Scan	10/12	182	(1.0)
Ball Complement Arrangement Quick-Releases Bolt	Scan	12/21	117	(0.5)
Upgrading Spring Performance	Joerres & Johnson	2/16	210	(5.0)
Shock Absorbers	Ramrath	2/16	217	(3.0)
High-Temperature Springs	Siegel	3/30	113	(4.0)
Liquid Springs	Nye & Behrens	6/8	150	(4.0)
Constant-Frequency Springs	Polak & Thomas	8/3	111	(3.0)
Belleville Springs	Buchert & Omberg	8/3	133	(3.0)
Mechanical Systems	Riffenburg	9/14	184	(5.0)
Instant Optimization for Springs	Craig & Kwosek	9/28	185	(4.4)
Packaging With Foam	Osgood	11/9	176	(6.0)
Understanding Combination Springs ...	Votta & Guerster	11/9	185	(5.0)
Safety Column Collapses In A Crash ..	N/T	2/2	8	(0.8)
Flexing Rings Absorb Shaft Shock	Scan	3/30	120	(1.0)
Squashed Coils Form Axial Spring	Scan	4/27	222	(0.5)
Auxiliary Rubber Track Softens Trolley Stop	Scan	5/25	170	(0.5)
Cam Mechanism Tailors Spring-Squeeze Rate	Scan	8/3	107	(1.0)
Bumpers Go Squish—Not Crash	DIA	5/11	64	(1.0)
What's Detroit Doing About Auto Theft?	N/T	6/8	39	(2.0)
Radials Begin To Roll	N/T	8/3	18	(3.0)
Evolution Of Automobile Tires	N/T	8/3	22	(3.0)
Piggyback Eccentrics Provide Variable Offset	Scan	2/16	215	(0.6)
Sliding Slats Iron-Out Web Wrinkles ...	Scan	9/28	163	(1.0)

Materials

51, 52. Ferrous, Nonferrous Metals

Stainless Steel Tubing	Schanek	4/27	236	(3.0)
Stainless Steels	Kopecki	7/6	127	(3.0)
Gray, Ductile, and High-Alloy Irons ...	Walton	M 12/14	4	(5.0)
Malleable Iron	Heine	M 12/14	9	(3.0)
Carbon and Low-Alloy Steels	Briggs	M 12/14	12	(4.0)
High-Alloy Steels	Schoefer	M 12/14	16	(5.0)
Carbon Steels	Kirkendall	M 12/14	21	(6.0)
High-Strength Structural Steels	Lacy	M 12/14	27	(4.0)
Low and Medium-Alloy Steels	Benzer	M 12/14	31	(4.0)
Stainless Steels	Kopecki	M 12/14	35	(4.0)
High-Temperature, High-Strength, Iron-Base Alloys	Johnson	M 12/14	39	(5.0)
Ultrahigh-Strength Steels	Hall	M 12/14	44	(2.0)
Free-Machining Steels	Nachtman	M 12/14	46	(2.0)
Materials	(Chapter)	F&J 6/15	8	(5.0)
Cost-Conscious Guide to Refractory Metals	Hegedus	11/9	169	(4.0)
Aluminum	Rowe, King & Blackmun	M 12/14	48	(10.0)
Copper	Strubell	M 12/14	58	(7.0)
Nickel	Hall	M 12/14	65	(8.0)
Magnesium	Hanawalt & Groes	M 12/14	73	(4.0)
Zinc	Horvick	M 12/14	77	(3.0)
Titanium	Erbin	M 12/14	80	(3.0)
Beryllium	Hawk	M 12/14	83	(2.0)
Refractory Metals	Chellus	M 12/14	85	(4.0)
Precious Metals	McGee	M 12/14	89	(2.0)
Aluminum Casting	(Article)	4/13	155	(9.0)
Diffusion-Bonded Titanium Saves Weight	N/T	1/19	23	(0.5)
Cryoquenching Keeps Aluminum From Warping	N/T	5/25	38	(0.6)

53. Plastics

Rigid/Flexible Plastic Extrusions	Fulmer	7/20	167	(2.0)
Teflon Engine-Piston Rings Improve Sealing	N/T	2/2	32	(0.5)
New Teflon Too Hard and Durable ...	N/T	2/16	39	(0.5)
Cold Plastic Is Stamped Into Shape ...	N/T	5/11	46	(1.0)
Synthetic 'Shoe Leather' Improves Hydraulic Packings And Packing Cups	N/T	5/25	40	(0.7)
Fishing Line and "Syrup" Make Up Waterless Waterfall	DIA	5/25	46	(0.6)
Foam-Filled Sandwich Material May Lead To Economical Plastic Car Bodies	DIA	8/3	42	(2.0)
The Future of Plated Plastics	CD	1/19	218	(1.7)
Progress in Reinforced Plastics	CD	3/16	212	(2.0)

55, 56. Joining Materials, Other Nonmetals

Adhesives for Aluminum	Earnest, Hovland & Minford	1/19	192	(9.0)
Sealants	Stein	8/3/9	93	(13.0)
Adhesives	Sharpe	F&J 6/15	120	(10.0)
Metallizing Ceramics	Kariak	5/11	160	(6.0)
Ceramics for Ultrahigh Temperatures ..	Glaser	8/17	146	(7.0)
Nuts, Bolts, and Bearings For 6,500 F	Sproule	8/31	93	(5.0)
New Ceramic Rivals Steel In Tension ..	N/T	2/16	36	(0.8)
Air Pollutant Is Turned Into Useful Product	N/T	4/27	12	(0.7)
Down To The Sea In Spheres	N/T	6/22	10	(0.6)
Strong Crystals Are Grown To Any Length	N/T	7/6	14	(0.5)
Concrete-Block Wall Made from On-The-Spot Castings	DIA	11/23	10	(0.5)
		10/26	52	(0.5)

57. Finishes, Coatings, Lubricants

Organic Coatings	Licari & Brands	5/25 175 (20.0)
Metallizing Ceramics	Kariak	5/11 160 (6.0)
Coatings	Beach	M 12/14 91 (6.0)
Finishes and Coatings	(Chapter) F&J 6/15 13 (3.0)	

New Polyimide Enamel Looks, Acts Like Porcelain	N/T	8/17 14 (0.5)
Wash-Away Zinc Protects Stainless-Clad Aluminum For Casting	N/T	9/14 16 (0.6)

58. Prefabricated Forms

Magnetic Probe Tests Computer-Memory Film	DIA	1/5 40 (0.5)
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Manufacturing Methods and Processes

61-63. Metals Casting, Shaping, Forming

Investment-Casting Design	Hinkle	12/7 148 (4.0)
Casting	Wallace	M 12/14 97 (4.0)
Roughening Die Castings Boosts Strength And Platability	N/T	7/6 37 (0.7)
Forging	Burbank	M 12/14 101 (3.0)
Extruding	Merrill & Barrett	M 12/14 104 (3.0)
Cold Extruding	Shiller & Isbit	M 12/14 107 (2.0)
Cold Heading	Havlis	M 12/14 109 (2.0)
Powder Metallurgy	Johnson	M 12/14 124 (2.0)
Short-Run Powder Metallurgy	Vanatt	12/21 108 (2.0)
Bubble Blowing Shapes Thin-Metal Parts	N/T	3/2 24 (0.7)
Metal Powders Gain Strength & Density	N/T	3/2 28 (0.7)
Atom Shaking Takes The Work Out of Metal Rolling	N/T	8/3 10 (0.5)
Tube Gets Big End Through Controlled Heat and Pressure	DIA	2/2 40 (1.0)
Fine-Edge Blanking	Jagos	6/8 163 (3.0)
High-Velocity Metalworking Processes ..	Noland	8/17 163 (20.0)
Stamping	Carter	M 12/14 111 (2.0)
Deep Drawing	McClurg	M 12/14 113 (2.0)
Spinning	Storch	M 12/14 115 (2.0)
Roll Forming	Keska	M 12/14 117 (2.0)
High-Velocity Forming	Zernow	M 12/14 119 (3.0)

64-66. Metals Joining, Removal, Treating

Ceramic-to-Metal Joints	Davis & de Givé	1/5 133 (3.0)
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High-Strength Bolted Joints	Kulju	5/25 195 (2.6)
Vacuum-Tight Welds	Bowen	6/8 176 (3.0)
Resistance-Welded Fasteners	Grey	F&J 6/15 42 (3.0)
Arc-Welded Fasteners	Singleton	F&J 6/15 45 (3.0)
Welding and Welding Alloys	Rudy	F&J 6/15 106 (7.0)
Brazing and Brazing Alloys	Pattee	F&J 6/15 113 (4.0)
Soldering and Soldering Alloys	Smith & Borcina	F&J 6/15 117 (3.0)

Joint Design	(Chapter) F&J 6/15 16 (12.0)	
Process Welds Closely Spaced Fins to Tubing	N/T	1/5 22 (0.5)
Steel Is Sculptured In New Sizes and Shapes	N/T	5/25 43 (0.5)
Evaluating Pulsed-Laser Welding	CD	12/21 126 (2.0)
Machining	Olofson	M 12/14 122 (2.0)
New Process Creates Superhard Parts ..	Daniels	8/17 46 (2.0)

67, 68. Metals Finishing, Plastics Processes

Thermal-Spray Coatings	Grisaffe	7/20 174 (3.0)
Wear-Sleeve Life Is Boosted By 10:1 ..	N/T	2/16 38 (0.5)
Electrodeposits Strengthen Rocket Case	N/T	5/25 16 (0.5)
Any Metal Is Coated On Any Metal ..	N/T	7/20 12 (0.7)
Flame-Sprayed Ceramic Coatings	AD	4/27 280 (1.8)
Ultrasonic Assembly	Koib	3/16 180 (6.0)
Stepped Aluminum Extrusions	Mason & Sundberg	12/21 118 (5.0)

Design Theory and Techniques

71-73. Mechanics, Strength of Materials and Parts

Rotating Machine Elements	Alexander & Ling	2/2 137 (4.0)
Vibration Analysis of Thin Rectangular Plates	Vet	4/13 193 (3.0)
Natural Frequency of Overhanging Beams	Reinert	6/8 179 (3.0)
The Anatomy of Noise	Beranek & Miller	9/14 174 (10.0)
Shock Testing	Lazarus	10/12 199 (16.0)
Vibration (Not Heat) Stress Relieves Parts	N/T	4/13 58 (1.5)
Fiber Metal Kills Jets' High-Frequency Noise	N/T	11/9 12 (0.5)
GM Turns Out Noise With 'Mechanical FM'	N/T	11/9 14 (1.3)
Rumbles Of Impending Disaster	N/T	12/7 50 (2.0)
Noise Notebook-1		9/14 189 (3.0)
Noise Notebook-2		9/14 200 (2.0)
Noise Notebook-3		9/14 209 (1.0)
Composite P/M Parts	Jaffe	3/30 123 (3.0)
How to Prevent Fatigue Failure:		
Part 1—Decrease Stress	Little	6/8 154 (6.0)
Part 2—Increase Strength	Little	7/6 130 (5.0)
Fracture Mechanics:		
Part 1—The Search for Safety in Numbers	Shannon	9/28 122 (6.0)
Part 2—Reducing Theory to Practice	Shannon	10/12 188 (7.0)
Choosing the Right Fatigue Test	Little	12/7 167 (8.0)
Torquing Stresses in Lubricated Bolts ..	Roehrich	6/8 171 (5.0)
Natural Frequency of Overhanging Beams	Reinert	6/8 179 (3.0)
Bending Without Breaking	Martiniell	7/20 185 (4.0)
Eccentrically Loaded Joints	Berger	8/17 185 (4.0)
Wear-Monitoring Systems	Botstiber	10/26 170 (7.0)
Bolted Joints: How Much Give?	Little	11/9 173 (3.0)
Shear Stresses in Curved Beams	Wang	12/7 175 (4.0)

74. Human Factors Engineering

Air from Water	Barnes	1/5 110 (7.0)
Technology Attacks Crime:		
Part 1—The Instant Cop	Wise	4/13 18 (6.0)
Part 2—Shotguns, Helicopters, and Money Sniffers	Wise	4/27 18 (6.0)
The Meaning of Product Aesthetics ..	Pulos	6/22 162 (6.0)
Industrial Equipment	Lee	6/22 179 (5.0)
Consumer Products	Graser	6/22 184 (5.0)
Agricultural Equipment	Koeber	6/22 189 (4.0)
Computer And Rocket Sled Show Auto Crashes The Same	N/T	2/16 12 (0.8)
Johnson Pressures Industry On Safety ..	N/T	3/16 8 (0.5)
'Chute-Testing Rocket Sled Ejects Dummies Into Gale	N/T	3/30 10 (0.5)
'Big-Brother' Shutterbug Plots Crash Antics of Humans	N/T	4/27 37 (0.7)
'Fire In The Spacecraft' Loses Some Of Its Terror	N/T	9/14 10 (1.0)
Standards Bureau Outlines Its Car-Safety Thinking	N/T	9/14 61 (0.9)
'Canned Astronauts' Complete A Working Week On The Moon	N/T	9/28 16 (0.7)
Controlled-Crush Front Ends Protect Passengers In '68 Fords	N/T	10/12 37 (1.0)
Newest Crash-Test Dummy Breaks And Cuts Like People	N/T	12/21 30 (1.0)
Skier Puts On Boots Through Slide Doors	DIA	3/30 42 (2.0)
F-111 Crew Module Plays Triple Role ..	DIA	9/14 65 (3.0)
Valve Introduces Child-Saving Seat	DI	8/17 37 (0.5)

75. Design Analysis and Synthesis

Vibration Analysis of Thin Rectangular Plates	Vet	4/13 193 (3.0)
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True Position Tolerancing for Fixed Fasteners	Lofgren	5/11 169	(6.0)
Making Product Models	Stein	6/22 193	(5.0)
Survey of Graphic Input Devices	Keast	8/3 114	(7.0)
Parabolic Curve Generator	Schrank	8/3 121	(1.0)
Approximating Roots	Williams	9/28 132	(1.0)
Dimensioning Castings	Bennett	10/12 195	(4.0)
Basic Course in Numerical Methods:			
Lesson 1—Power Series	Ekstrom	10/26 195	(4.0)
Lesson 2—Newton's Method	Ekstrom	11/9 197	(3.0)
Lesson 3—Matrix Algebra	Ekstrom	12/7 183	(3.0)
Lesson 4—Gauss Elimination Method	Ekstrom	12/21 123	(2.0)
The Design Process	Coryell	11/9 154	(8.0)
Data Reduction Techniques	Decker	11/23 149	(7.0)
Engineer's Vocabulary Is Taught To Computers	N/T	2/16 47	(0.6)
'Solid' Holograms Of Designers' Ideas Are Produced By Computer	N/T	4/13 14	(0.6)
Computer Draws Tires and Molds	N/T	4/13 60	(0.5)
Console Replaces Sliderule As Engineer's Private Problem Solver	N/T	5/11 12	(0.5)
Electronic Wind Tunnel: Newest Tool For Airfoil Design	N/T	5/11 48	(0.5)
Time Sharing Isn't The Only Answer	N/T	5/11 57	(2.0)
Electron Beams Provide Instant Prints Of Computer-Generated Data	N/T	5/25 14	(0.6)
Doctors Train On Plastic Cadaver	N/T	7/6 42	(3.0)
Computer Generates 3D Pictures	N/T	9/14 56	(0.5)
3D Display Lets Armchair Spacemen Fly			
Real Moon Missions	N/T	9/28 41	(0.8)
Formal Design Review	CD	3/30 136	(2.3)
The Challenge of Change	CD	8/17 190	(3.3)

76. Basic Sciences

Army Looks At "Living" Vehicles	Barnes	5/25 18	(5.0)
Keeping Light Beams on Target	Durie	9/28 129	(4.0)
Volunteers Get Stuck For Spinal-Motion Research	Savanas & Porter	10/12 30	(3.0)
'Interplanetary Billiards' May Propel Multiplanet Flybys	N/T	1/5 8	(0.7)
Going Metric—Britain's First Year	N/T	2/16 24	(1.0)
Wind-It-Yourself Kidney Cleans Blood In The Home	N/T	4/27 16	(0.6)
Back-Guarding Mirror Monitors All The Action	N/T	5/11 12	(0.5)
Electron Bullets Will Light The Heavens	N/T	5/11 60	(0.5)
Pigeon's Eye Is Duplicated by Electronics	N/T	5/25 14	(0.6)
Atomic Steam Engine Inside The Body May Power Artificial Heart	N/T	8/3 10	(0.5)
Bodies Await Reanimation In Cryogenic Capsules	DIA	3/16 48	(2.0)
Patient's Tongue "Tells" Mechanical Arm Where To Go	DIA	5/11 66	(2.0)
Physiology and Engineering	CD	2/16 236	(2.6)
Conquest of Inner Space	CD	5/11 191	(1.8)
Human Repair Parts	CD	8/3 136	(3.0)

77. Experimental, Advanced Design

Magnetic Modules	DI	1/19 37	(0.6)
Fastener Evaluation	Brenner F&J	6/15 28	(3.0)

78. Environmental Design

Air from Water	Barnes	1/5 110	(7.0)
Drilling The Deep Six	Barnes	3/30 18	(6.0)
Industry in Orbit: First Factory Will Blast Off By Year 2000	Wise	6/8 40	(4.0)
Can Technology Clear The Air?	Kalika	7/20 18	(16.0)
A Working Day On The Moon	Seminara, Shavelson & Parsons	8/3 28	(3.0)
Clothes That Clank	Barnes	8/17 28	(4.0)
Farming The Sea . . . The Arriving Age Of Aquaculture	Barnes	12/7 20	(6.0)
'Underwater Hitchhiking' Will Hurry Deep Diver to Stricken Submarine	N/T	1/19 8	(1.0)
Sea Pressure Toughens Deepview's Glass Nose	N/T	2/2 10	(0.5)
Pressure Living Speeds Salvage	N/T	2/2 19	(0.7)
Troubles Plagued Command Module 012	N/T	2/16 8	(2.0)
Lunar Lab Scours Moon's Surface	N/T	2/16 36	(0.7)
Space Workshop	N/T	3/2 14	(3.3)
Beneath The Ocean Floor	N/T	3/16 14	(2.3)
Apollo 204 Dangers	N/T	3/16 29	(1.3)
Sound Wav's Take Pictures Of Ocean Floor	N/T	3/30 10	(0.5)
Saturn V Makes Ready For the Moon	N/T	3/30 12	(0.5)
Scaled Saturn Speeds Separation Solutions	N/T	3/30 37	(0.5)
By Jupiter in '72	N/T	4/27 40	(4.0)
Oxygen Is Reclaimed In One-Step Salt Bath	N/T	5/11 14	(0.5)
Six Wheeler Suggested For Moon Trips	N/T	5/11 37	(0.7)
Underwater Taxi	N/T	5/11 40	(1.6)
Gemini's CO ₂ Killer Breathes New Life	N/T	5/11 48	(0.5)
Pilot Takes Controls When Moving Around Sub	N/T	5/25 10	(0.7)
Deep Quest Slides Down The Ways	N/T	6/8 12	(0.5)
Divers Work Four Days At 400 ft.	N/T	6/8 60	(0.8)
First Tests For Advanced Life-Support System	N/T	8/3 13	(0.7)
Flying Ice Machine Puts Private Planes Through Foulest Weather	N/T	8/17 16	(0.7)
High-Pressure Thinking Leads To Far-Out Tanking	N/T	8/31 14	(1.3)
Apollo/Saturn V Awaits "All-Up" Command	N/T	10/26 42	(4.0)
Old Booster Proposed As First 'Permanent' Moon Base	N/T	11/23 12	(0.6)
JPL Builds A Better Moltrap	N/T	11/23 53	(0.7)
'Vibrating' Spaceman Gets Weighed In Zero Gravity	N/T	12/7 10	(0.5)
Sandy Meteoroids May Have Deadly Cores	N/T	12/7 32	(0.7)
Twisting Cats May Teach How To Maneuver In Zero G	N/T	12/21 10	(0.6)
Class Project Pioneers Magnetic Sub	DIA	4/13 63	(1.0)
Attack Sub Features More Automation, Smaller Crew	DI	5/11 52	(0.6)
Corrosion Coatings for Ferrous Fasteners	CL	6/22 205	(2.1)
Corrosion Causes and Cures	CD	1/9 261	(4.3)

Engineering Management, Personal

81. Engineering Department Operations

Evaluation for Development	Raudsepp	1/19 166	(6.0)
Spotting a Potential Engineering Manager	Marvin	2/16 198	(3.0)
Engineer Turnover:			
Part 1—Is the Grass Really Greener?	Raudsepp	2/16 192	(6.0)
Part 2—Why Change Jobs?	Raudsepp	3/2 78	(4.0)
Part 3—Causes of Discontent	Raudsepp	3/16 166	(5.0)
Any Engineer Can Be a Leader	Kilgore	3/2 82	(2.0)
Engineer Turnover:			
Part 4—How To Keep the New Man	Raudsepp	3/30 109	(4.0)
Evaluating Engineering Performance	Marvin	4/13 152	(3.0)
How To Sell Your Company on Campus	Raudsepp	4/27 200	(6.0)
Checklist for Project Engineers	Rossnagel	4/27 206	(3.0)
How To Brighten the Student Image of Engineering	Raudsepp	5/11 152	(5.0)
How Not To Succeed in Management	Gattis	5/11 157	(3.0)
Therapy for Discontent	Raudsepp	6/8 144	(6.0)
Evaluating Engineers: The Case for Position Descriptions	Hayes	7/6 96	(5.0)
Is Achievement Its Own Reward?	Raudsepp	7/6 101	(1.0)
Project Planning	Kattelmann	7/20 142	(5.0)
Communications Needs the Professional Touch	D'Aprix	7/20 147	(4.0)
Configuration Management	Zawacki	8/3 100	(7.0)
Parallel Path Advancement—Method or Malarkey	Raudsepp	8/17 142	(4.0)
When You Buy Outside V.E.	Cahill	8/31 84	(6.0)
Keeping Up-to-Date:			
Part 1—The Learning Dropouts	Raudsepp	10/12 168	(5.0)
Part 2—Management Approves—with Reservations	Raudsepp	10/26 154	(4.0)
Salaries Jump 5% for Starting Engineers	N/T	1/19 18	(0.5)
R&D Budgets Are Climbing But Leveling	N/T	2/2 10	(0.5)
Why Do Engineering Students Drop Out?	N/T	2/16 32	(0.7)
Brain Plane Hits Smaller Cities	N/T	4/27 8	(0.5)
Proposed Draft Law To Limit Student Deferrals	N/T	6/22 8	(0.6)

Four Disturbing Days Train An Engineering Manager	N/T	6/22 28	(3.0)
Up, Up, And Away Go Engineering Salaries	N/T	7/20 8	(1.6)
Another Record-Breaking Recruiting Season Reported	N/T	8/17 8	(0.5)
Need For Technicians Rises	N/T	9/14 8	(0.7)
ETC's Salary Smorgasbord	N/T	10/26 18	(3.0)
Why Engineers Job Hop	N/T	12/21 8	(0.5)

82-84. New Products, Drafting, Testing

Attitudes Determine Good Product Design Technology in Turmoil	Sinex	1/19 172	(2.0)
The Future of Engineering—A New Social Involvement	Tucker	3/30 94	(15.0)
Expo 67: A Painless Education	Aronson	7/6 18	(7.0)
A Diagram for Development	Sedgwick	12/7 142	(3.0)
Designs For Relaxing Win Student Awards	N/T	7/20 47	(1.0)
Creating Successful New Products	CD	2/2 149	(3.0)
Build Your Own Perspectograph	Neou	5/11 187	(1.5)
Automatic Drafting	Laviole	12/21 94	(8.0)
Selector Matches Length Of Copy And Original	DIA	6/8 64	(2.0)
Ammonia Vapor Transports and Develops Drawing Prints	DIA	11/9 66	(0.5)
Graphic Design by Computer	CD	1/5 156	(3.0)
Realistic Friction Testing	Kitchen & Azzam	3/16 195	(6.0)
Planning and Implementing Test Programs	Young	11/23 142	(7.0)
Laboratory Testing Techniques	Orcutt	11/23 169	(7.0)
Environmental Testing Techniques	Elliott	11/23 176	(6.0)

Field-Testing Techniques	Bloedorn	11/23	182	(6.0)
New Tower 'Flies' Rotors For Double-Size Whirlybirds	N/T	5/11	14	(0.5)
Ice Machine Tests Hover Power Of Helicopters	N/T	5/11	60	(0.5)

85. Technical Information

Obstacles to Professional Publication....	D'Aprix	1/5	106	(4.0)
You can Improve Your Engineering Communications	Smith	2/2	104	(4.0)
Writing Is A Technical, Not Literary, Assignment	Pearson	2/2	109	(1.0)
The Challenge of Our Technology Stockpile	Douglas	3/16	218	(0.7)
Are Information Systems Doing Their Jobs?	Jacobson	6/22	40	(4.6)
Write It Like a Pro	Clarke	8/31	90	(3.0)
Don't Make All of Them Write	Lunch	10/12	173	(3.0)
IR on a Budget	Manzone	11/9	162	(7.0)
A Dictionary Of Instrumentation Terminology	(Article)	11/23	156	(13.0)
How To Work with the Fourth Estate....	Raudsepp	12/7	145	(3.0)
Speedup in Information Transfer	CD	4/27	274	(3.3)
Our Changing Language	AD	7/20	189	(4.0)

87, 88. Personal, Professional, Outside Services

Masters of Illusion: Part 1	Wood	2/2	110	(6.0)
Masters of Illusion: Part 2	Wood	2/16	202	(8.0)
Tactical Tips for Negotiating	Rossnagel	3/16	171	(3.0)
Technology in Turmoil:				
The Future of Engineering—A New Social Involvement	Tucker	3/30	94	(15.0)
Creativity Is a Task, Not a Trait	Freund	5/25	161	(2.0)
Therapy for Discontent	Raudsepp	6/8	144	(6.0)
Expo '67: A Painless Education	Aronson	7/6	18	(7.0)
How Valuable Is a P.E. License?	Raudsepp	9/28	118	(4.0)
How to Aggravate Your Boss	Burgess	10/26	158	(4.0)
Fighting Obsolescence	Nypan	12/21	90	(4.0)
Design Show '67: Biggest Ever	N/T	4/13	32	(1.0)
Expo '67	N/T	4/27	62	(2.0)
Unions Would Save Engineers, Prof. Claims	N/T	5/11	8	(0.5)
Electricals To Bolt Engineers Joint Council	N/T	11/9	8	(0.6)
Whatever Became of the Class of '67?..	N/T	11/23	8	(1.0)
Contest Draws Creative Responses From Draftsmen	N/T	12/21	14	(1.3)
The Profile of Industrial Design	Dreyfuss	6/22	156	(6.0)
Organizing Creativity	Lease & Van Acker	6/22	198	(4.0)

Specific Machines and Equipment

911. Ordnance

Hot-Rod Armor	Aronson	8/31	20	(5.0)
Fastest Draw in the West	Wise	10/26	20	(4.0)
TOW Missile Is Tried by the Footsoldier	N/T	1/19	14	(0.6)
The Deadly Bite Of Puff, The Magic Dragon	N/T	4/27	44	(4.0)
Phoenix/F-111B Kills Its Bird	N/T	4/27	57	(0.5)
Afterburner Tied To Its Tail Doubles Rocket's Range	N/T	9/28	10	(0.5)
Chaparral Kills Six Aircraft	N/T	10/26	16	(0.6)
New Battle Tank Beats Anything On Earth	N/T	11/9	10	(0.6)
Army's First Laser Trains Tank Gunners	N/T	11/9	54	(0.6)
Mobile Fort Will Put Down Riots	N/T	11/23	56	(2.0)
Low-Cost Research Rocket Readied	DI	9/14	35	(0.5)
Hardwood Floor For Tank Track	DI	11/23	40	(0.5)

912. Machinery

The Tide Turns For U. S. Fishermen....	Barnes	6/22	18	(7.0)
Production Machines	Doane	6/22	168	(5.0)
Business Machines	Furlani	6/22	173	(6.0)
Filling Up Jumbo	Wood	10/12	21	(7.0)
Factory In The Forest	Wood	11/9	20	(7.0)
Progress Of Plenty	Wood	11/23	21	(10.0)
The No-Money Society	Wise	12/21	20	(6.0)
No-Hands Cargo Transferer Shuffles 400,000 lb Daily	N/T	4/13	46	(2.0)
Short-Line RR Hoists Nuclear Rockets....	N/T	4/13	57	(0.5)
Tong Mechanism Grips To Suit	Scan	7/6	120	(1.0)
Revolving Cylinders Orient Random Feed Concentric Funnel's Capture Fill Dust....	Scan	8/3	110	(0.5)
Automated Conveyor Reduces Luggage Handling Snafu	DIA	2/2	36	(1.0)
Potato Chips Are Tastier With Electrostatic Salt	DIA	2/16	68	(0.5)
Grapher-Getter Plow Rids Rodent Menace	DIA	3/16	56	(0.5)
Sorter Puffs Away Oil-Color Food	DIA	8/3	46	(0.5)
Cage-Like Gripping Head Maneuvers Paljetized Loads	DIA	8/17	54	(0.7)
Sea Plow Buries Transatlantic Cable	DIA	10/12	48	(3.0)
Serpentine Belt Wrings Juice From Grapes	DIA	11/23	44	(1.0)
Wire-Twanging Spike Knocks Grapes From The Vine	DIA	11/23	46	(1.0)
Joy-Stick Control Guides Tree-Shaking Arm	DIA	11/23	48	(1.0)
Belts And Blotters To Clean Up Harbors	DIA	12/7	46	(1.0)
Big Fork Reaches With Four-Bar Linkage	DI	4/13	37	(1.0)
Driver Juggles Load To Keep Truck Stable	DI	5/25	34	(0.6)
Rejected Jet Powers Snow Melter	DI	8/17	40	(0.5)

913. Electrical Machinery

No-Tug Tape Transports	N/T	6/8	28	(1.0)
Go-Anywhere Extension Puts Your 'Phone In Your Pocket	N/T	7/20	14	(0.7)
Sea Plow Buries 'Phone Lines Out Of Fishing Boat's Reach	N/T	8/17	12	(0.5)
WESCON Awards	N/T	8/31	26	(2.0)
Motorola's Modular TV: Ten Circuits In Suitcase	N/T	9/14	54	(1.0)

Telephone Puts Color In Black-And-White TV	N/T	11/9	41	(0.6)
Monitor Transmits Data from Whirling Turbine Blades	DIA	1/5	42	(0.5)
Wives Take Over Appliance-Repair Chores	DIA	3/2	32	(1.0)
Split-Beam Beacon Guides Small-Ship Pilots	DIA	11/9	66	(0.5)
Miniature Jukebox Lets You Carry A Tune-In Stereo	DIA	12/7	44	(2.0)
Rivalry, High Cost, Mar Europe's Budding Color-TV Network	DI	3/30	48	(1.0)

914. Transportation

The Giants Are Coming	Wise	1/19	174	(7.0)
On To Mach 12	Wise & Wood	3/2	84	(6.0)
Design for One Lay	Wise	3/16	174	(6.0)
Year of the Turbine?	Wood	5/11	19	(7.0)
Grand Prix Of The Petite Planes	Kemmerer	5/25	26	(4.0)
Mass Transit: A New Priority On People	Wise	6/8	18	(5.0)
Autopsies On Airliners	Wood	8/17	18	(7.0)
'68 Cars	Wise	9/14	20	(8.0)
'68 Cars	Wise	9/28	20	(7.0)
Daring Men In Flying Machines	Barnes	10/12	40	(4.0)
Racing GT Is Redesigned for U. S. Highways	N/T	1/5	10	(1.0)
New Mining Tool Grew Out of Steel Conference	N/T	1/5	14	(0.6)
100-mph Road Is Proposed for Highway Safety Research	N/T	1/5	14	(0.7)
Light-Producing Diode Puts Sound on Home-Movie Film	N/T	1/5	27	(0.7)
Camera Watches Landing Through Runway Window	N/T	1/19	12	(0.7)
Dropping Cars Starts Roadside-Improvement Program	N/T	1/19	16	(0.8)
Harmless Accidents? Hard To Deliver, Says Detroit	N/T	2/2	14	(2.6)
'Flying Brick' Ready for Power	N/T	2/16	14	(2.3)
Lunar Pogo Stick Would Hop On A Gas Spring	N/T	2/16	29	(0.7)
Indoor Luxury For Outdoor People	N/T	3/16	22	(3.0)
Duck-Billed Simulator Makes Like Future Jets	N/T	4/13	10	(0.7)
The Electric Car: Anode Yanking Promises Quick Refueling	N/T	4/13	14	(0.7)
Aerospacers Will Try Ship Designing ..	N/T	4/13	26	(1.0)
The Venerable Autogyro	N/T	4/13	40	(2.0)
Truck Bumper Stops Car Underrun	N/T	4/13	52	(0.7)
Cleju Raoses The Roof With Low Idea Car	N/T	4/27	10	(0.7)
Bahama 500	N/T	4/27	14	(1.3)
Wing Change Outfits X-15 For Mach 8	N/T	4/27	26	(0.5)
Electric Car Goes Into Production	N/T	4/27	28	(2.0)
LA Airport Goes Underground?	N/T	4/27	60	(0.5)
Ultimate Car-Safety Harness Still In Doubt	N/T	5/25	37	(0.8)
Dream Tractor Tackles Any Task	N/T	6/8	14	(1.3)
Production Engines Powered The Winner In Bahamas-500	N/T	6/22	32	(0.9)
Electric Car, Automated Roads Studied for Buffalo, N. Y.	N/T	7/6	10	(0.5)
"Snap-On" Jets Vary STOL Aircraft's Performance	N/T	7/6	12	(0.7)
Noise Nuisance May Cause Redesign Of Jet Engines	N/T	7/6	14	(0.5)
Indy Aftermath: Hot Controversy Over The Turbine	N/T	7/6	16	(0.6)

Rail-Hugging Ridge Runner	N/T	7/6	28	(1.0)
Firefighting Tanker Dumps Lakes On Forests	N/T	8/17	10	(0.6)
'Flying-Brick' Pilots Have Too Much To Do	N/T	8/31	12	(0.6)
Catamaran Shields Its Instruments By Under-Third-Bow Mounting	N/T	9/28	10	(0.5)
'Short-Hop' Jet Will Carry 300 In Comfort	N/T	10/12	14	(0.5)
'Life Raft' Skims On Air Cushion	N/T	10/12	16	(0.5)
Compound Helicopter Hops Quicker Than Jets	N/T	10/26	14	(0.5)
Can a Glider Girdle the Globe?	N/T	10/26	40	(2.0)
Astronaut's Taxi Leaves Without Him ..	N/T	11/23	10	(0.5)
Consumer Amphibian Rides An Air Cushion	N/T	11/23	16	(0.5)
Tracked First Stage Builds Rocket's Blastoff Speed	N/T	12/7	14	(0.6)
'Flying Gunboat' Makes Ready For War Air Sacs Take Load on Swamp-Traveling Truck	N/T	12/7	57	(0.5)
Water Isn't Enough	DIA	1/19	32	(1.0)
Britons Ride The Waves On Water-Skimming Scooter	DIA	2/2	42	(2.0)
Lugar-Like Gas Gun Goes Ping or Pow	DIA	2/16	64	(2.0)
VTOL Researchers Try Slotted-Tube Rotor	DIA	4/13	66	(2.0)
Pilot Can Escape From Sunken Aircraft	DIA	5/11	68	(1.0)
Curveless Cargo Ships Come In 100 Varieties	DIA	5/25	48	(2.0)
Gummed-Up Boats Slip Through Water	DIA	5/25	52	(1.0)
Evolution Of The Killer Copter	DIA	6/8	66	(1.0)
Student Project Spawns Outrigger Speed Boat	DIA	6/22	54	(3.0)
Stow A Boat In The Closet	DIA	7/20	50	(1.0)
Motel on Wheels	DIA	12/21	42	(1.0)
Viggen Prototype Readied for Flight Test	DI	1/5	30	(0.6)
Front-Wheel Drive	DI	2/2	34	(0.5)
Two Nation V/STOL Now Under Evaluation	DI	4/13	34	(0.5)
New Bug Blasts Into '68 Market With Many Miniscule Modernizations	DI	7/6	32	(0.6)
Wankel Engine Gives Soaring Plane A Lift	DI	9/28	44	(3.0)
Europe's Cars Get in Line with U. S. Safety Regulations	DI	10/12	61	(0.7)
Collapsible Column	DI	10/26	61	(1.0)
Roving Eyes	DI	10/26	64	(1.0)
Canted Engine	DI	10/26	66	(1.0)
Invisible Changeover	DI	10/26	68	(0.5)
Renault Goes To The Races	DI	10/26	68	(0.5)
		11/9	69	(0.5)

Lifeboat Passes "5-Minute Fry" Test	DI	11/23	41	(0.6)
Will It Be Cheap Enough?	DI	12/21	38	(0.5)
Speed Up the Motor	CD	3/2	126	(3.0)
Design Challenges of the SST	CD	9/14	226	(2.6)

915. Instruments

Instrument Suspensions	Herzl	1/19	182	(10.0)
Essentials of a Measurement System ...	Simpson	11/23	188	(7.0)
Pictures Frozen Into Tape Give Air Force Instant Maps	N/T	8/3	37	(1.0)
Load Cell—Newest Tool For Surgeons	N/T	9/14	58	(0.5)
Sound Analyzer Pictures Exactly What Ear Hears	N/T	12/7	10	(0.5)
Fastest Happening Is Caught With a Mirror	N/T	12/7	57	(0.5)
Fogged Crystal Indicates Dew Point ..	Scan	12/21	115	(0.5)
Reflected Grid Shows Wheel Misalignment	DIA	1/5	38	(1.0)
"Talking" Shoe Aids Research On Handicapped	DIA	8/3	46	(0.5)
Venetian-Blind Wing Proposed For V/STOL Aircraft	DIA	8/31	32	(0.6)
Compact Camera Gets Compressed	DIA	9/28	48	(1.0)
Miniature 35 Carries Big-Camera Conveniences	DI	2/2	34	(0.5)
Kids Learn Early With Teaching "Toy"	DI	8/3	34	(0.5)

916. Fabricated Metal Products

Lunar Drill Cuts 10-ft Deep When Leaned On By a Flyweight	N/T	1/5	19	(1.0)
They Finally Built A Better Trap	DIA	8/31	30	(1.0)
European Toy Review	DI	12/7	40	(3.0)

990. Miscellaneous

Holy Oblivion! Is Batman Passe?	N/T	3/30	28	(3.0)
The Great Monster Hunt	Spector	9/14	44	(5.0)

